SHARP

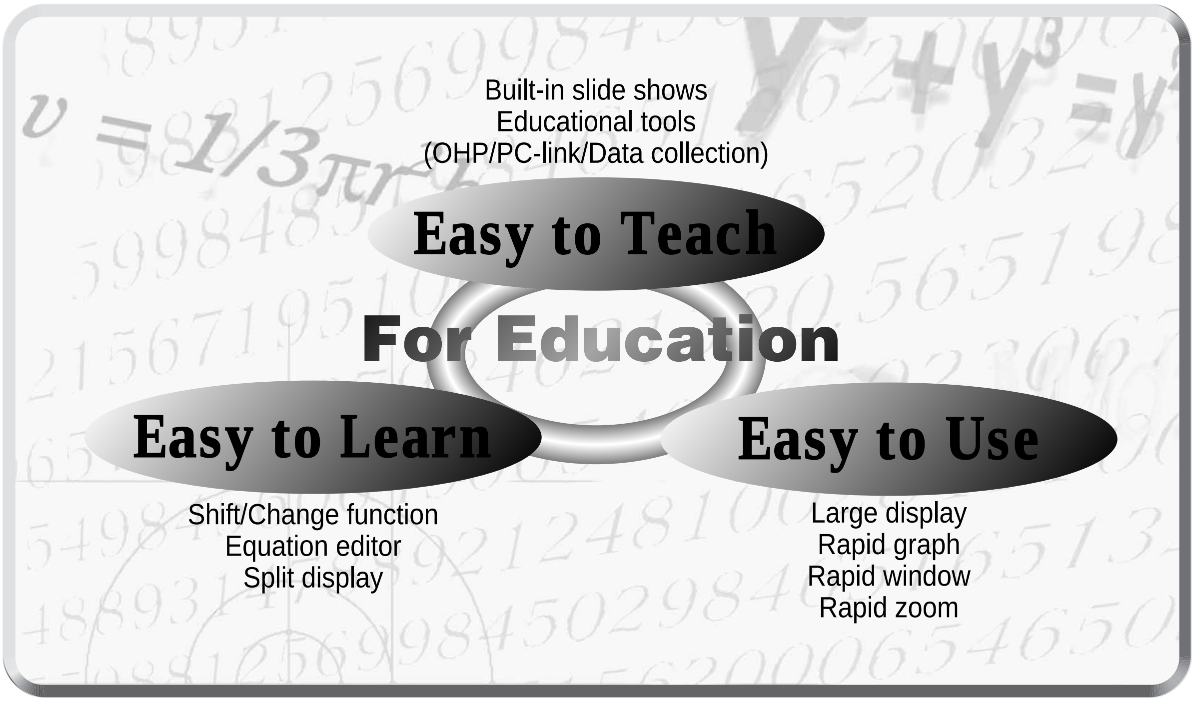
Graphing Calculator
EL-9400
TEACHERS' GUIDE



Introduction

The EL-9400 was developed to meet the needs of an expanding education market and is based on three concepts: easy to teach, easy to learn and easy to use. The EL-9400 has been designed with simplified operations and time-saving features, allowing teachers to concentrate on actual teaching.

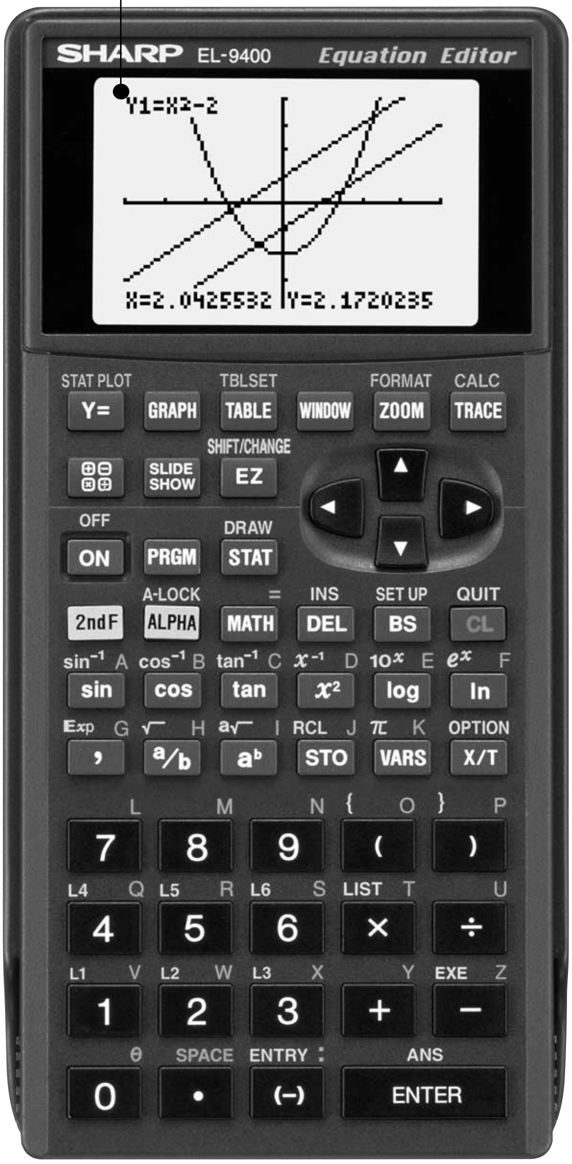
This manual was designed to introduce teachers to the unique features of the EL-9400 using detailed operation examples.



Contents

Sales points

❶ **Large 96 x 64-dot display**



❷ Graph **Shift/Change** shows how "changing" the graph affects the equation

❸ **Slide Shows** reduce class preparation time

❹ **Equation Editor** shows equations just as in textbooks

❺ **Rapid graph/Rapid window** simplify graphing procedures

❻ **Rapid zoom** allows easy adjustment of window size

Basic operation

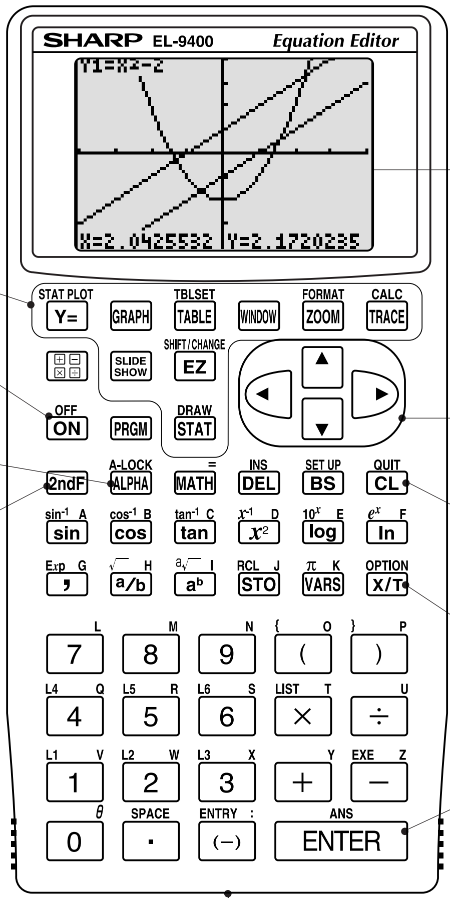
Power ON/OFF

ON	Power on
2nd F ON (OFF)	Power off
CL	Erase equations and remove error displays
2nd F CL (QUIT)	Cancel of previous function (Escape)

Function keys

Y=	Use to enter equations
GRAPH	Use to draw graphs
TABLE	Use to view table of function value
WINDOW	Use to set size of viewing window
ZOOM	Use to adjust the viewing range
TRACE	Use to trace graphs
+ − × ÷	Use to enter calculation mode
SLIDE SHOW	Use to enter slide show mode
EZ	Use to operate Rapid Graph/Rapid Window and Rapid Zoom functions

Names of parts



SHARP

Basic operation

Guide to key use

Press 2nd F to use secondary functions (in yellow).

Press ALPHA to use the alphabet keys (in blue).

Example: sin (sin⁻¹ A printed above the key)

To select "sin": sin

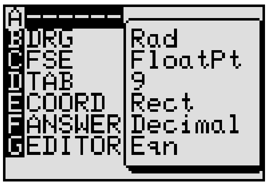
To select "sin⁻¹": 2nd F sin

To select A: ALPHA sin

SET UP menu

Press 2nd F SET UP A.

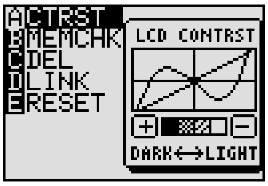
- Contents displayed on the right side of the screen are the current settings.



[There may be differences in the results of calculations and graph plotting depending on the SET UP settings.]

Adjusting screen contrast

- The contrast adjust screen will appear when pressing 2nd F OPTION.



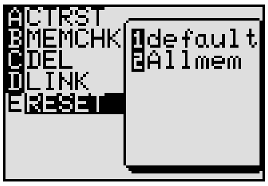
Press − to lighten contrast.

Press + to darken contrast.

Reset function

1) When trouble occurs

Press 2nd F OPTION E to enter the reset mode.



- Use this function (1 or 2) to return all settings to the default value or to delete all data.

2) All RESET operation

- If trouble still occurs, proceed as follows:
  1. Press the RESET switch on the back.
  2. Press ON.
     - Returns to the initial display.

CAUTION
Do not press CL in step 2. It will delete all data stored in the calculator.

Equation editor

The equation editor allows equations to be viewed just as they are written in textbooks. This increases student comprehension and allows mistakes to be found quickly.

Example

Input the equation and see how it can be easily viewed with the equation editor. $\int_0^{\frac{1}{2}} \frac{x}{\sqrt{1-x^2}} dx$

Key Operation | ***Display*** | ***Notes***

1

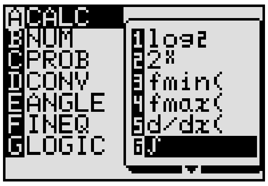
[+−×÷] [CL]



Clear the display.

2

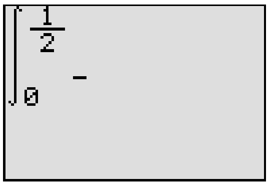
[MATH] [ENTER] [▼] [▼] [▼] [▼] [▼] (or [MATH] [A] [6])



Select CALC and ∫ (Integral function)

3

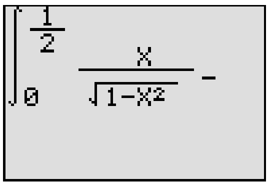
[ENTER] [0] [▶] [1] [a/b] [2] [▶] [▶]



Enter the range of the integral.

4

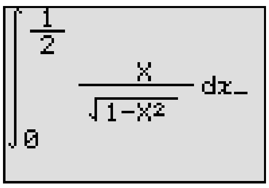
[X/T] [a/b] [2nd F] [√‾] [1] [−] [X/T] [x^2] [▶] [▶]



Enter $\frac{x}{\sqrt{1-x^2}}$

5

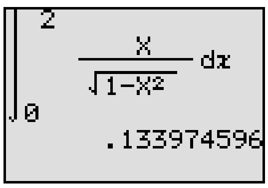
[MATH] [ENTER] [▼] [▼] [▼] [▼] [▼] [▼] [ENTER] (or [MATH] [A] [0] [7])



Complete equation input.

6

[ENTER]



Calculate the expression.

[The blinking mark in the upper right side of the display indicates the expression is being calculated.]

Shift (Change the location of graphs)

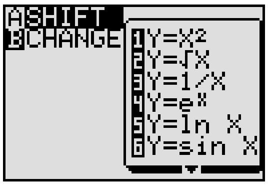
Graph shift function helps students grasp the relationship between an equation and its graph. Shift the graph's location without changing its shape, and the change is immediately reflected in the equation on the right side of the display.

Example

When the graph of $y = x^2$ is shifted downward, how does this affect the equation?

Key Operation | **Display** | **Notes**

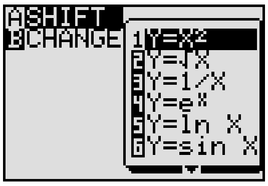
1 2nd F SHIFT/CHANGE



Enter **SHIFT/CHANGE** mode.

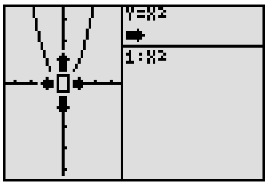
[If **A SHIFT** is not already highlighted press ▲ .]

2 ENTER



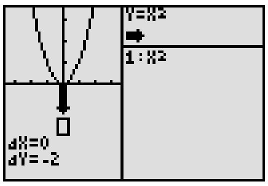
Select shift. Cursor moves to the equation menu.

3 ENTER



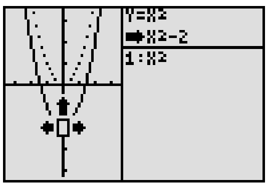
Select the equation: $y = x^2$ and draw the graph.

4 ▼ ▼



Select the location of the shift: move cursor down twice.

5 ENTER



View the result of the shift.

[$y = x^2$ ↓ $y = x^2$-2]

Change (Change the shape of the graphs)

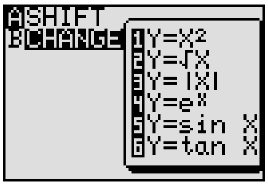
Graph change function helps students grasp the relationship between an equation and its graph. Change the shape of the graph, and the change is immediately reflected in the equation on the right side of the display.

Example

When the graph of $y = x^2$ is changed, how does it affect the equation?

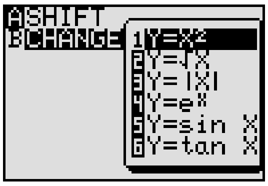
Key Operation | ***Display*** | ***Notes***

1 — 2nd F SHIFT/CHANGE ▼



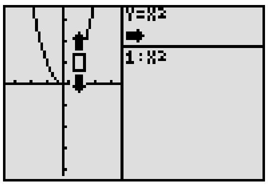
Enter **SHIFT/CHANGE** mode and specified (**B CHANGE**).

2 — ENTER



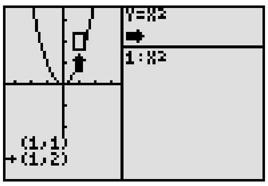
Select change. Cursor will move to the equation menu.

3 — ENTER



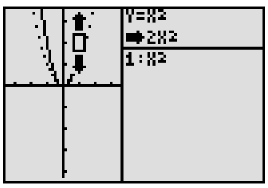
Select the equation: $y = x^2$ and draw the graph.

4 — ▲



Select the location of the change: increase the value of y-coordinates.

5 — ENTER



View the result of the change.

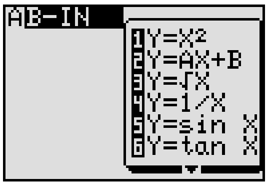
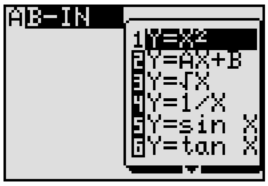
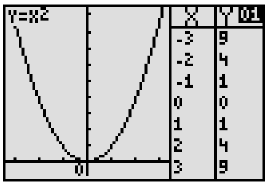
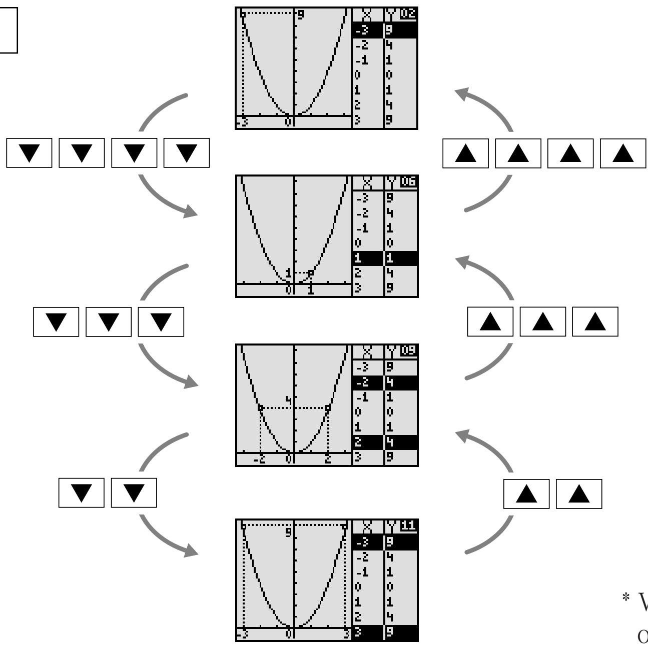
$$\left[\begin{array}{c} y = x^2 \\ \downarrow \\ y = 2x^2 \end{array}\right]$$

Slide show

Slide show assists with teacher preparation. By selecting from the built-in options or creating your own series of slides, you can demonstrate lessons with minimum preparation time.

Example

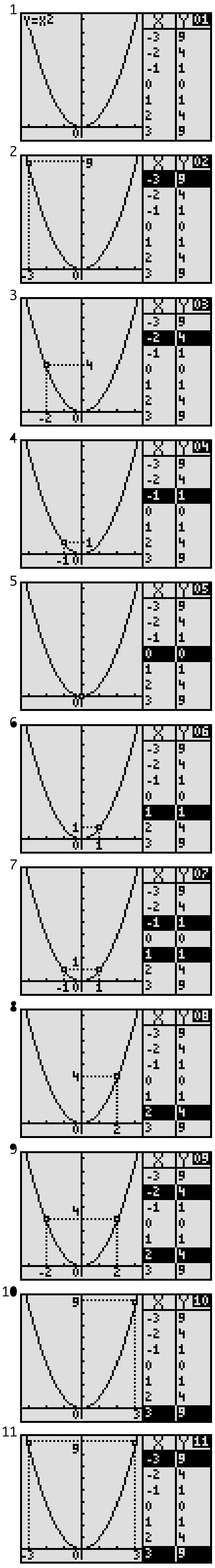
Use the built-in slide show of $y = x^2$ to show how the coordinates change as you move along the graph.

Key Operation	***Display***	***Notes***
1 SLIDE SHOW		Specified **SLIDE SHOW** mode.
2 ENTER		Select the built-in menu.
3 ENTER		Select $y = x^2$ and the first slide appears.
4 ▼		Begin the slide show by pressing the ▼ cursor key. Moving between the values you can follow the changes in the graph's coordinates, making the nature of the graph easier to understand.

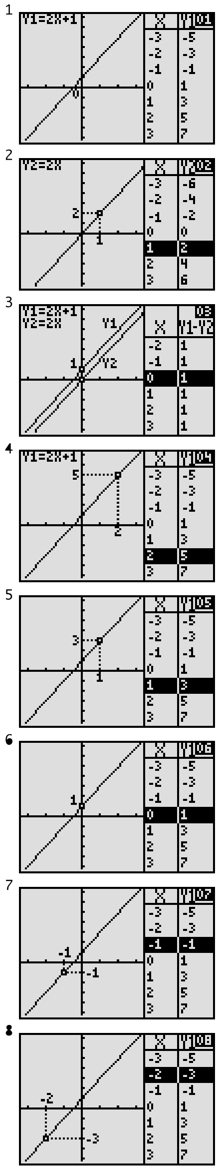
* View the selection of built-in slide shows on the following pages.

Built-in slide show selections

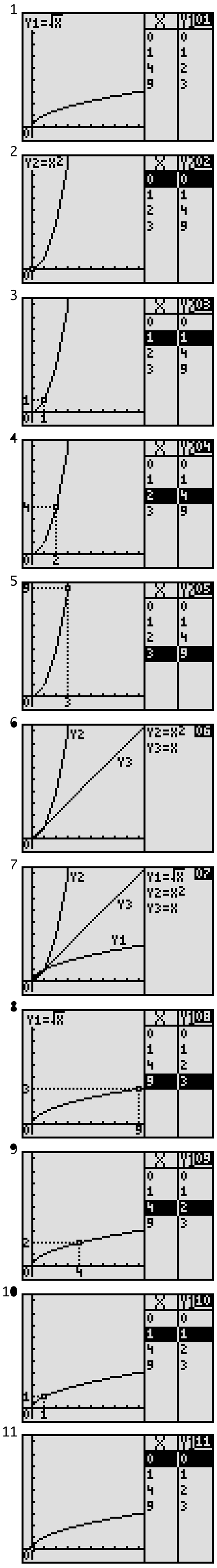
1) $Y=X^2$



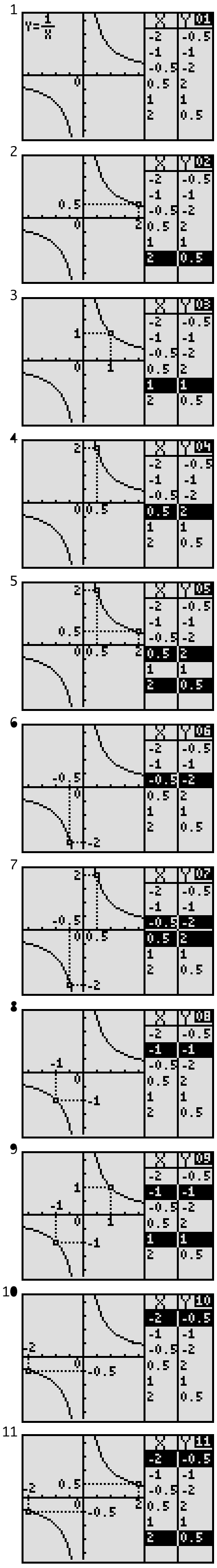
2) Y=AX+B



3) $Y=\sqrt{X}$



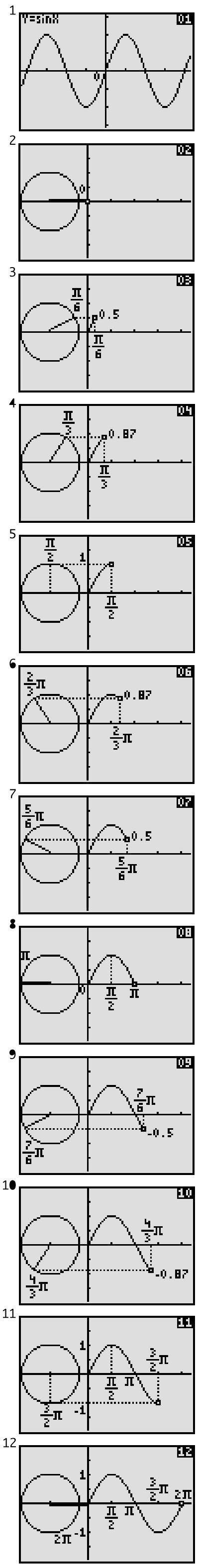
4) Y=1/X



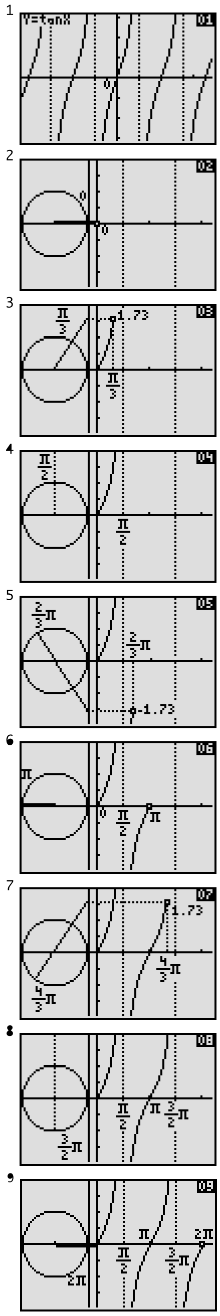
SHARP

Built-in slide show selections

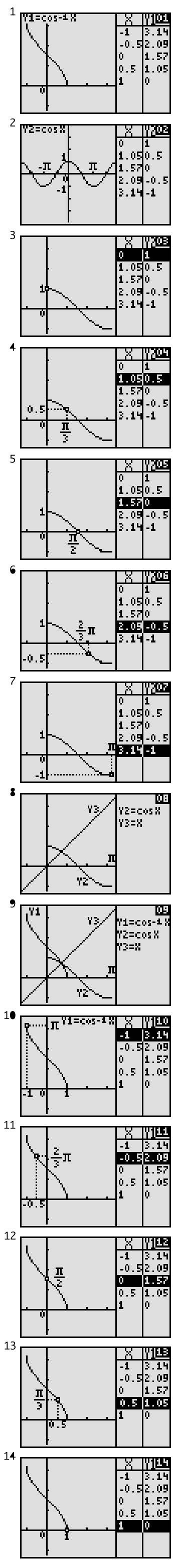
5) Y=sinX



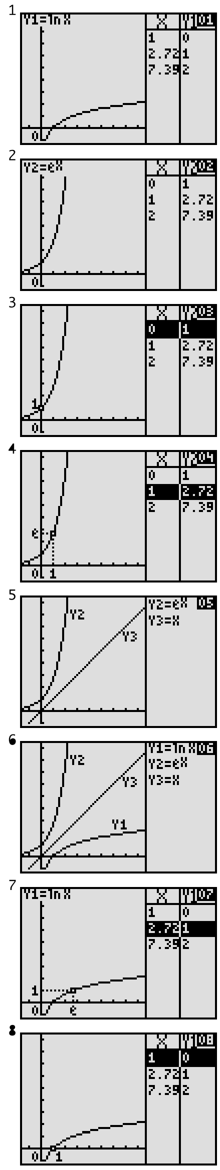
6) Y=tanX



7) $Y=\cos^{-1}X$



8) Y=lnX



Graphing Procedures

The EL-9400 has three unique functions that simplify graphing procedures: Rapid Graph, Rapid Window and Rapid Zoom. Of course, the EL-9400 supports conventional graphing procedures as well.

Graphing Procedure

Following outlines graphing procedures and indicates the steps where Sharp's unique functions can be used to simplify operations. These functions are introduced on the following pages.

Step 1

Input equation

Manual Input

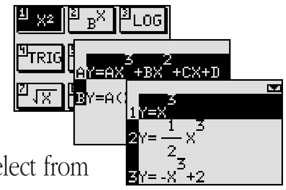
[Y=]

[X/T] [a^b] [3] [▶] [+] [X/T]

[x^2] [–] [2] [X/T]

Rapid Graph

[EZ]



Simply select from built-in menu to modify desired type of equation .

Step 2

Set X, Y range

Xmin =
Xmax =
Xscl =
Ymin =
Ymax =
Yscl =

Manual Input

[WINDOW]

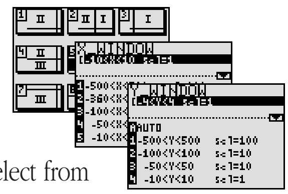
[(–)] [3] [ENTER] [3] [ENTER]

[1] [ENTER] [(–)] [1] [•] [5] [ENTER]

[1] [•] [5] [ENTER] [•] [5] [ENTER]

Rapid Window

[EZ]

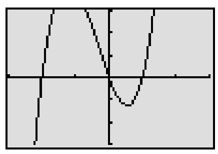


Simply select from built-in menu to set window size.

Step 3

Draw graph

[GRAPH]



Press Graph button to draw graph.

Step 4

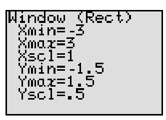
Adjust viewing window

Manual Input

[WINDOW]

Amending range size

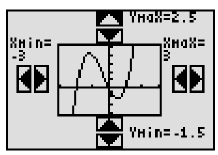
[GRAPH]



Go back to Step 2 to readjust window size.

Rapid Zoom

[EZ]



Use arrows to adjust window size while viewing graph.

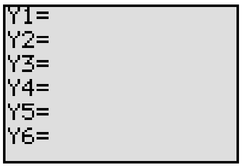
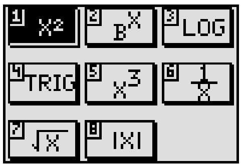
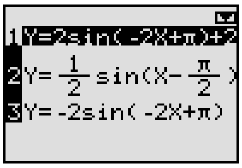
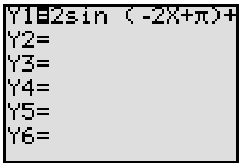
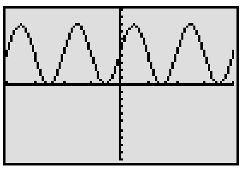
SHARP

Rapid graph

Graphing has never been easier. With its full range of preset equations, rapid graph simplifies equation input. Use in conjunction with the rapid window function or with any graph created.

Example

Draw the graph for $y = 2\sin(-2x+\pi) + 2$ using the rapid graph function.

Key Operation	Display	Notes
1 [Y=]		Enter the equation entry mode.
2 [EZ]		Enter Rapid Graph mode and view the equation-type menu.
3 [▼] [ENTER]		Select the type of equation: Trigonometric, and view the equation format menu.
4 [ENTER]		Select the sin equation format and view the sin equation style.
5 [ENTER]		Select the second equation style and input. If necessary, make changes to the coefficients.
6 [GRAPH]		Draw the graph. (Note: Previous range values may affect the viewing window. To reset range values, use Rapid Window.)

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Rapid window

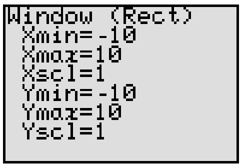
Rapid window simplifies setting window size with a range of preset values. Use in conjunction with the rapid graph function or with any graph created.

Example

After using Rapid Graph to draw the graph of y = 2sin (-2x+π) + 2 (refer p. 11), set the viewing window using the rapid window function.

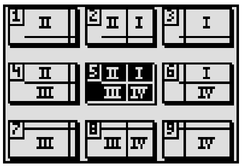
Key Operation / ***Display*** / ***Notes***

1 [WINDOW]



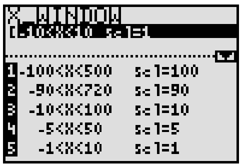
Enter viewing window setup mode.

2 [EZ]



Enter Rapid Window mode.

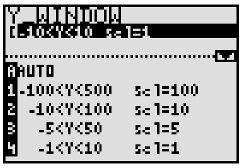
3 [▼] [▶] [ENTER]



Select the No. 3 style and view the X-range menu.

4 [▼] (Five times) [ENTER]

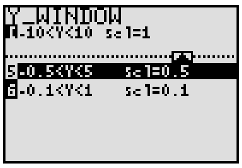
(or [5] [ENTER])



Select X-range No. 4:
(-1 < X < 10 scl=1), and view the Y-range menu.

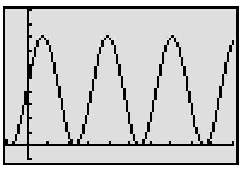
5 [▼] (Six times)

(or [5])



Move the cursor to No. 5:
(-0.5 < Y < 5 scl=0.5)

7 [ENTER]



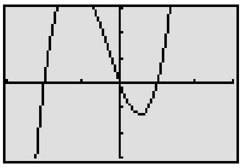
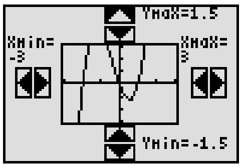
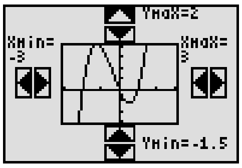
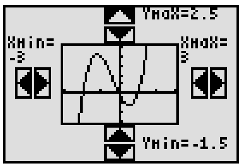
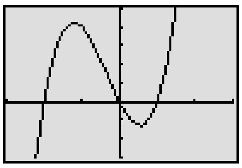
Select the Y-range and draw the graph.

Rapid zoom

Rapid zoom offers one-touch adjustment of window size while viewing the graph. No more guessing or wasting class time to find optimal values for window size.

Example

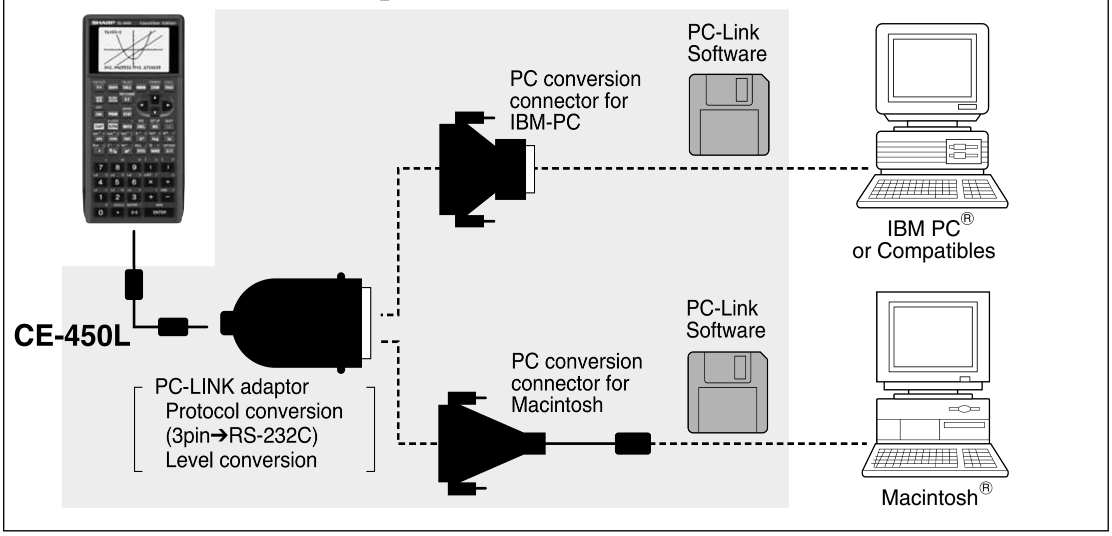
Adjust the viewing window for $y = x^3 + x^2 - 2x$ to show the entire graph.

Step	Key Operation	Display	Notes
1	Y= X/T a^b 3 ▶ + X/T x^2 — 2 X/T WINDOW (−) 3 ENTER 3 ENTER 1 ENTER (−) 1 • 5 ENTER 1 • 5 ENTER • 5 ENTER GRAPH		Create the graph $y = x^3 + x^2 - 2x$ using the following conditions: X-range: xmin = -3 xmax = 3 xscl = 1 Y-range: ymin = -1.5 ymax = 1.5 yscl = 0.5
2	EZ		Enter Rapid Zoom mode.
3	▼ ENTER		Change X-range from Ymax = 1.5 to Ymax=2. Draw the graph.
4	ENTER		Repeat: Change Y-range from Ymax = 2 to Ymax=2.5. Draw the graph
5	GRAPH		View display (adjusted).

PC-LINK

Connect the EL-9400 with a PC or Macintosh computer to expand the possibilities of data exchange using PC-Link software.

CE-LK1(PC-link system)



What is PC LINK?

- Creates and edits EL-9400 programs on a PC.
- Receives and saves programs and various data from EL-9400.
- Makes a backup of all the contents of EL-9400.
- Sends programs and various data to EL-9400.
- Loads image data of EL-9400.
- Converts programs and various data files into a Text File. Converts program text files into a Program File.
- Prints out programs and various data files.

Procedure

1 Turn off the EL-9400.

2 Connect the EL-9400 to the PC by using the CE-450L, PC-Link adaptor and PC connector (see above diagram).

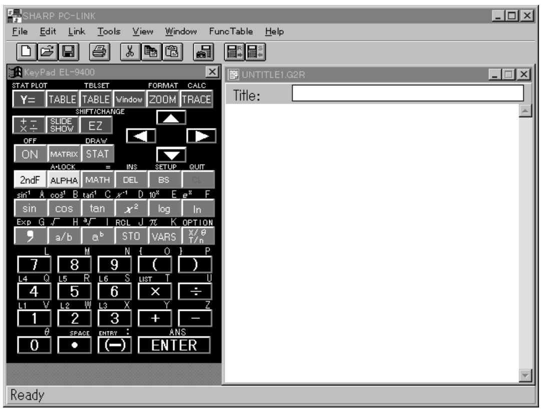
3 Make sure that the RS-232C (serial port) is connected to the PC. Use of the connector is determined by the shape of the PC serial port (see below chart).

4 Open PC Link-Software.

5 Switch on EL-9400.

* It is essential to use the same port for both the PC and the PC Link-Software.

6 Operate according to the instructions on the screen.



Shape of PC serial port	Connecting procedure
25 pin (male)	Connect the other side (25-pin side) of PC LINK adaptor to the serial port for the PC.
9 pin (male)	Connect the other side (25-pin side) of PC LINK adaptor to the 25-pin terminal of a converting adaptor. Also connect the other side (9-pin side) of the converting adaptor to the serial port for the PC.
8 pin (female)	For Macintosh

Set to set communication

Transfer data between two EL-9400 calculators using the communication cable (CE-450L).



Communication Procedure

1 Plug the cable into both calculators.

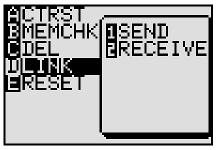
2 Turn power on.

3 **Receiver**

2nd F OPTION

▼ ▼ ▼

(or D)



Specified LINK.

4 ENTER ▼

ENTER

(or 2)



Select LINK/RECEIVE.

5 **Sender**

2nd F OPTION

▼ ▼ ▼

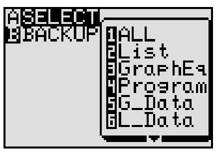
(or D)



Specified LINK.

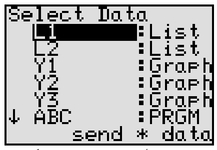
6 ENTER ENTER

(or 1)



Select LINK/SEND.

7 ENTER ENTER



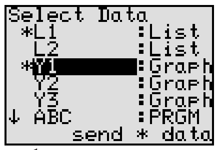
Select SEND/ALL.

[List of sendable data will appear on screen.]

8 ENTER

▼ ▼

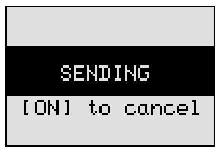
ENTER



Select ‘LI’, ‘YI’

[* mark desired data to be sent.]

9 2nd F EXE



Execute Sending function.

List of the SEND menu

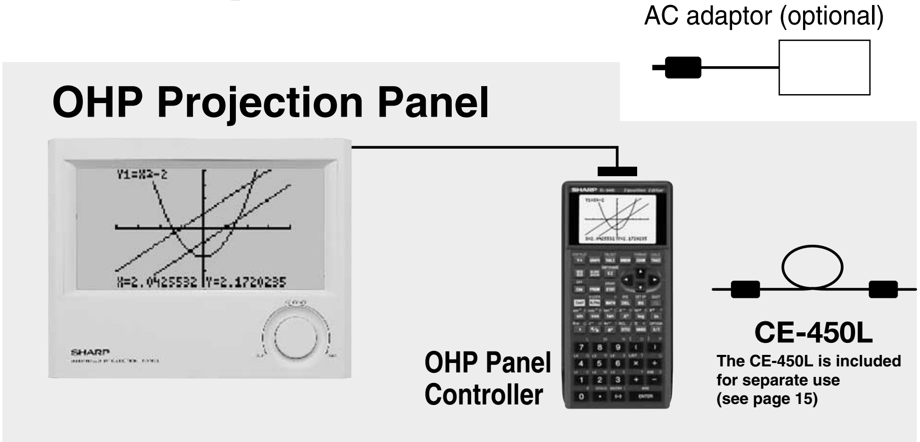
A SELECT	Sends files individually as described below.
1 ALL	Selects and displays all files.
2 List	Selects and displays all list files.
3 GraphEq	Selects and displays all graph eqations.
4 Program	Selects and displays all program files.
5 G_Data	Selects and displays all graph data files.
6 L_Data	Selects and displays all list data files.
7 Picture	Selects and displays all picture data files.
8 A~Z, Ø	Selects and displays all fixed memory of A to Z, and Ø
B BACKUP	Menu to send all data of files. Use this feature to send the entire content.

SHARP

OHP System

Use the EL-9400 OHP system with the overhead projector to make classroom presentations convenient for the whole class to see.

EL 94T (OHP system)



Procedure

1 Switch off the OHP Panel Controller.

2 Plug in the cable connector of the OHP Projection Panel straight into the connection terminal of the OHP Panel Controller.

(The optional AC adaptor is recommended for extended use of the OHP Projection Panel.)

3 Switch on the OHP Panel Controller.

4 Operating the OHP Panel Controller.

The OHP Projection Panel display is synchronized with the display of the OHP Panel Controller.
Place the OHP Projection Panel on top of the overhead projector to project images onto the screen.

5 Turn on the power of the overhead projector.

Menu tree 1

SET UP (2ndF SET UP)

- A ——
  - Rad
  - FloatPt
  - 9
  - Rect
  - Decimal
  - Eqn
- B DRG
  - 1 Deg
  - 2 Rad
  - 3 Grad
- C FSE
  - 1 FloatPt
  - 2 Fix
- D TAB
  - 1 1
  - 2 2
  - 3 3
  - 4 4
  - 5 5
  - 6 6
  - 7 7
  - 8 8
  - 9 9
  - 0 0
- E COORD
  - 1 Rect
  - 2 Param
- F AMSWER
  - 1 Decimal
  - 2 Mixed
  - 3 Improp
- G EDITOR
  - 1 Eqn
  - 2 Oneline

FORMAT (2ndF FORMAT)

- A ——
  - OFF
  - OFF
  - Connect
  - Sequen
- B EXPRES
  - 1 ON
  - 2 OFF
- C Y'
  - 1 ON
  - 2 OFF
- D STYLE1
  - 1 Connect
  - 2 Dot
- E STYLE 2
  - 1 Sequen
  - 2 Simul

MATH (MATH)

- A CALC
  - 1 log2
  - 2 2^x
  - 3 fmin(
  - 4 fmax(
  - 5 d/dx(
  - 6 ∫
  - 7 dx
- B NUM
  - 1 abs(
  - 2 round(
  - 3 ipart
  - 4 fpart
  - 5 int
  - 6 min(
  - 7 max(
  - 8 lcm(
  - 9 gcd(
- C PROB
  - 1 random
  - 2 nPr
  - 3 nCr
  - 4!
- D CONV
  - 1 →deg
  - 2 →dms
  - 3 xy→r(
  - 4 xy→θ(
  - 5 rθ→x(
  - 6 rθ→y(
- E ANGLE
  - 1 °
  - 2 '
  - 3 "
  - 4 ^{r}
  - 5 ^{g}
- F INEQ
  - 1 =
  - 2 ≠
  - 3 >
  - 4 ≥
  - 5 <
  - 6 ≤
- G LOGIC
  - 1 and
  - 2 or
  - 3 not
  - 4 xor
  - 5 xnor

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Menu tree 2

When coordinate system is Rect

CALC (2ndF CALC)

- CALC
  - 1 Value
  - 2 Intsct
  - 3 Minimum
  - 4 Maximum
  - 5 X_Incpt
  - 6 Y_Incpt
  - 7 Inflec

When coordinate system is Param

CALC (2ndF CALC)

- CALC
  - 1 Value

LIST (2ndF LIST)

- A OPE
  - 1 sortA(
  - 2 sortD(
  - 3 dim(
  - 4 fill(
  - 5 seq(
  - 6 cumul
  - 7 df_list
  - 8 aug...(
- B MATH
  - 1 min(
  - 2 max(
  - 3 mean(
  - 4 median(
  - 5 sum(
  - 6 prod(
  - 7 stdDv(
  - 8 varian(
- C L_DATA
  - 1 stoLD
  - 2 RclLD

STAT (STAT)

- A EDIT
  - edit list
  - Press ENTER
- B OPE
  - 1 sortA(
  - 2 sortD(
  - 3 SetList
  - 4 ClrList
- C CALC
  - 1 1_Stats
  - 2 2_Stats
- D REG
  - 01 Med Med
  - 02 ax+b
  - 03 a+bx
  - 04 x^2
  - 05 ln
  - 06 log
  - 07 ab^x
  - 08 ae^{bx}
  - 09 x^{-1}
  - 10 ax^b
  - 11 x'
  - 12 y'

DRAW (2ndF DRAW)

- A DRAW
  - 1 ClrDraw
  - 2 Line(
  - 3 H_Line
  - 4 V_Line
  - 5 T_Line(
  - 6 Draw
  - 7 Shade(
  - 8 DrawInv
  - 9 Circle(
  - 0 Text(
- B POINT
  - 1 PntON(
  - 2 PntOFF(
  - 3 PntCHG(
  - 4 PxlON(
  - 5 PxlOFF(
  - 6 PxlCHG(
  - 7 PxlTST(
- C ON/OFF
  - 1 DrawON
  - 2 DrawOFF
- D LINE
  - select line type
  - Press ENTER
- E G_DATA
  - 1 StoGD
  - 2 RclGD
- F PICT
  - 1 StoPict
  - 2 RclPict
- G SHADE
  - 1 SET
  - 2 INITIAL

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Menu tree 3

ZOOM (ZOOM)

- **A ZOOM**
  - 1 Auto
  - 2 Box
  - 3 In
  - 4 Out
  - 5 Default
  - 6 Square
  - 7 Dec
  - 8 Int
  - 9 Stat
- **B FACTOR**
  - Set factor of zoom
  - Press ENTER
- **C POWER**
  - 1 X^2
  - 2 X^{-1}
  - 3 $\sqrt{X}$
- **D EXP**
  - 1 10^x
  - 2 e^x
  - 3 log x
  - 4 In x
- **E TRIG**
  - 1 sin x
  - 2 cos x
  - 3 tan x
  - 4 $\sin^{-1}$ x
  - 5 $\cos^{-1}$ x
  - 6 $\tan^{-1}$ x
- **F STO**
  - 1 StoWin
- **G RCL**
  - 1 StoWin
  - 2 PreWin

PROGM-COM (2ndF PRGM on Program screen)

- **A PRGM**
  - 1 Print
  - 2 "
  - 3 Input
  - 4 Wait
  - 5 Rem
  - 6 End
- **B BRNCH**
  - 1 Label
  - 2 Goto
  - 3 If
  - 4 Gosub
  - 5 Return
- **C SCRN**
  - 1 ClrT
  - 2 ClrG
  - 3 DispT
  - 4 DispG
- **D I/O**
  - 1 Get
  - 2 Send
- **E COORD**
  - 1 Rect
  - 2 Param
- **F FORM**
  - 1 ExprON
  - 2 ExprOFF
  - 3 Y' ON
  - 4 Y' OFF
  - 5 Connect
  - 6 Dot
  - 7 Sequen
  - 8 Simul
- **G S_PLOT**
  - 1 Plt1(
  - 2 Plt2(
  - 3 Plt3(
- **H COPY**
  - 1 StoLine
  - 2 RclLine

VARS (VARS)

- **A EQVARS**
  - Graph equation
  - Press ENTER
- **B WINDOW**
  - Value of window
  - Press ENTER
- **C STOWIN**
  - Value of stored window
  - Press ENTER
- **D L_DATA**
  - 1 L_Data 1
  - 2 L_Data 2
  - 3 L_Data 3
  - 4 L_Data 4
  - 5 L_Data 5
  - 6 L_Data 6
  - 7 L_Data 7
  - 8 L_Data 8
  - 9 L_Data 9
  - 0 L_Data 0
- **E G_DATA**
  - 1 G_Data 1
  - 2 G_Data 2
  - 3 G_Data 3
  - 4 G_Data 4
  - 5 G_Data 5
  - 6 G_Data 6
  - 7 G_Data 7
  - 8 G_Data 8
  - 9 G_Data 9
  - 0 G_Data 0
- **F PICTUR**
  - 1 Pict1
  - 2 Pict2
  - 3 Pict3
  - 4 Pict4
  - 5 Pict5
  - 6 Pict6
  - 7 Pict7
  - 8 Pict8
  - 9 Pict9
  - 0 Pict0
- **G TABLE**
  - 1 TBLStrt
  - 2 TBLStep
  - 3 TBLList
- **H STAT**
  - stat
  - Press ENTER

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Menu tree 4

EQ VAR (VARS A)

A XY	B XYT	
1 Y1	01 X1T	07 X4T
2 Y2	02 Y1T	08 Y4T
3 Y3	03 X2T	09 X5T
4 Y4	04 Y2T	10 Y5T
5 Y5	05 X3T	11 X6T
6 Y6	06 Y3T	12 Y6T
7 Y7		
8 Y8		
9 Y9		
0 Y0		

WIN VAR (VARS B)

A XY	B T
1 Xmin	1 Tmin
2 Xmax	2 Tmax
3 Xscl	3 Tstep
4 Ymin	
5 Ymax	
6 Yscl	
7 X_Fact	
8 Y_Fact	

ZOOM VAR (VARS C)

A STOXY	B STOT
1 Zm_Xmin	1 Zm_Tmin
2 Zm_Xmax	2 Zm_Tmax
3 Zm_Xscl	3 Zm_Tstp
4 Zm_Ymin	
5 Zm_Ymax	
6 Zm_Yscl	

STAT VAR (VARS H)

A XY		B REGEQN	C POINTS
01 n	09 Σxy	1 RegEqn	1 x1
02 $\bar{x}$	10 $\bar{y}$	2 a	2 x2
03 sx	11 sy	3 b	3 x3
04 σx	12 σy	4 c	4 y1
05 xmin	13 ymin	5 r	5 y2
06 xmax	14 ymax	6 r^2	6 y3
07 Σx	15 Σy	7 R^2	7 Q1
08 Σx^2	16 Σy^2	8 resid	8 Med
			9 Q3

PRGM (PRGM)

A EXEC	B EDIT	C NEW
01	01	Cleate new program
02	02	
03	03	Press ENTER
04	04	
05	05	
06	06	

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Menu tree 5

STAT PLOT (2nd F STATPLOT)

- A PLOT1
  - Stat plot1
  - Press ENTER
- B PLOT2
  - Stat plot2
  - Press ENTER
- C PLOT3
  - Stat plot3
  - Press ENTER
- D LIMIT
  - 1 SET
  - 2 LimON
  - 3 LimOFF
- E ON/OFF
  - 1 PlotON
  - 2 PlotOFF

OPTION (2nd F OPTION)

- A CTRST
- B MEMCHK
  - Remain 12345bytes
  - Press ENTER
- C DEL
  - 1 List
  - 2 GraphEq
  - 3 Program
  - 4 Picture
  - 5 G_Data
  - 6 L_Data
  - 7 Entry
- D LINK
  - 1 SEND
  - 2 RECEIVE
- E RESET
  - 1 default
  - 2 All mem

STAT GRAPH (2nd F STATPLOT on PLOT1-3screen)

- A HIST
  - 1 Hist
- B B.L.
  - 1 Broken•
  - 2 Broken+
  - 3 Broken□
- C N.P.
  - 1 Norm•X
  - 2 Norm+_X
  - 3 Norm□_X
  - 4 Norm•_Y
  - 5 Norm+_Y
  - 6 Norm□_Y
- D N.D.
  - 1 NormDis
- E BOX
  - 1 Box
- F MBOX
  - 1 MBox•
  - 2 MBox+
  - 3 MBox□
- G S.D.
  - 1 Scattr•
  - 2 Scattr+
  - 3 Scattr□
- H XYLINE
  - 1 xyLine•
  - 2 xyLine+
  - 3 xyLine□

SLIDE (SLIDESHOW)

- A B-IN
  - 1 $Y=X^2$
  - 2 $Y=AX+B$
  - 3 $Y=\sqrt{X}$
  - 4 $Y=1/X$
  - 5 $Y=\sin X$
  - 6 $Y=\tan X$
  - 7 $Y=\cos^{-1}X$
  - 8 $Y=\ln X$

SHIFT/CHANGE (2nd F SHIFT/CHANGE)

- A SHIFT
  - 1 $Y=X^2$
  - 2 $Y=\sqrt{X}$
  - 3 $Y=1/X$
  - 4 $Y=e^x$
  - 5 $Y=\ln X$
  - 6 $Y=\sin X$
  - 7 $Y=\tan X$
  - 8 $Y=|X|$
- B CHANGE
  - 1 $Y=X^2$
  - 2 $Y=\sqrt{X}$
  - 3 $Y=|X|$
  - 4 $Y=e^x$
  - 5 $Y=\sin X$
  - 6 $Y=\tan X$

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Menu tree 6

Y= ([Y=])

- RECT MODE
  - Y1=
  - Y2=
  - Y3=
  - Y4=
  - Y5=
  - Y6=
  - Y7=
  - Y8=
  - Y9=
  - Y0=
- PAR MODE
  - X1T=
  - Y1T=
  - X2T=
  - Y2T=
  - X3T=
  - Y3T=
  - X4T=
  - Y4T=
  - X5T=
  - Y5T=
  - X6T=
  - Y6T=

LINK ([2nd F] [OPTION] [D] 1)

- A SELECT
  - 1 All
  - 2 List
  - 3 GraphEq
  - 4 Program
  - 5 G_Data
  - 6 L_Data
  - 7 Picture
  - 8 A~Z,θ
- B BACKUP
  - back up
  - Press [ENTER]

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Specifications

Dimensions W x D x H (mm)			163 x 76 x 19.5 (without hardcase)
Power			AAA x 4
Backup Battery			CR2032 x 1
Display	Size (dot)		96 x 64
	Line x Characters		8 x 16
	Character Size (dot)		5 x 7
	Digits (mantissa + exponent)		10 + 2
Memory	Total Memory Size		32 KB
	Constant Memory		27 + last answer memory
Accessory	Protective hard case		
Standard Features	Graphing	Function graphing	Up to 10
		Parametric graphing	Up to 6
		Zoom, Trace	
		Table of function values	
	Statistics	Regression models	10
		Scatter Plots and Histograms	
		Box-and-Whisker Diagrams	
	Other	List	Up to 6 (Maximum length : 999)
		Programming	
		Trigonometry functions (including sec, csc, cot)	
		Fraction/Decimal conversions	
		Last entry recall	
		Last answer recall	
Features unique to Sharp	Equation editor, Shift/Change, Slide show (Built-in), Rapid graph, Rapid window, Rapid zoom, List grouping		
Peripheral	CE-450L		Unit-to-unit communications cable
	CE-LK1		PC-Link (Print screen/Data storage)
	EL-94T		OHP system (includes controller)

* Design and specifications are subject to change without notice.
* Some products may not be available in some countries.

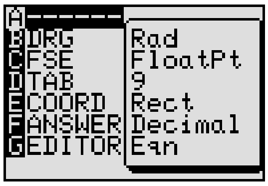
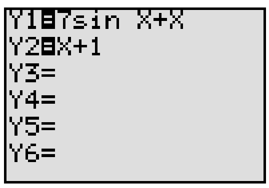
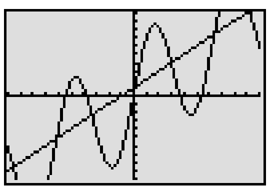
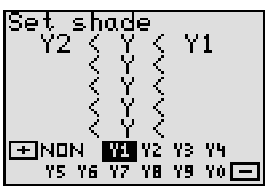
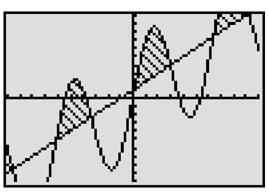
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Rectangular coordinate graphs

Example

Use rectangular coordinate to enter two graph equations and shade the area surrounded by the graphs

Before carrying out the following operation, press the reset switch located on the back of the unit and press CL ENTER keys (caution: previously entered equations and memory will be erased).

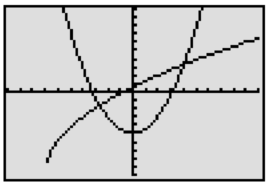
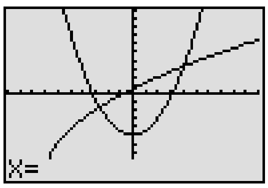
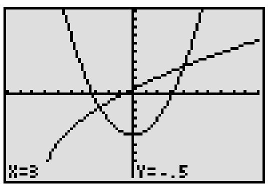
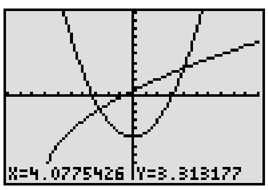
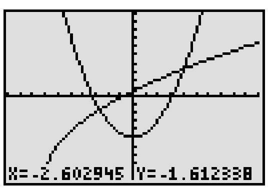
Key Operation	***Display***	***Notes***
1 2nd F SET UP E 1		Specify Rect mode on the screen. [As shown, Rect corresponds to **E COORD**. The example shows the initial settings of the EL-9400.]
2 Y= 7 sin X/T + X/T ENTER		Enter graph equation "7sinX+X" at Y1.
3 X/T + 1 ENTER		Enter graph equation "X+1" at Y2.
4 GRAPH		Display the graph.
5 2nd F DRAW G 1 − − ▶ −		Specify the area surrounded by the two graph equations to be shaded. (Y2<Y<Y1 on screen shows area to be shaded as larger than Y2 and smaller than Y1).
6 GRAPH		Return to the graph display and the specified area will be shaded.

CALC function

Example

Use the CALC function to solve graph equations (The coordinate axis is rectangular coordinates.)

Before carrying out the following operation, press the reset switch located on the back of the unit and press CL ENTER keys (caution: previously entered equations and memory will be erased).

Key Operation	***Display***	***Notes***
1 Y= 0 • 5 X/T x^2 — 5 ENTER	Y1=0.5X²-5 Y2= Y3= Y4= Y5= Y6=	Enter the graph equation "0.5X²-5" at Y1.
2 4 2nd F √ X/T + 7 ▶ — 1 0	Y1=0.5X²-5 Y2=4√X+7 -10 Y3= Y4= Y5= Y6=	Enter the graph equation "4√X+7-10" at Y2.
3 GRAPH		Display the graph.
4 2nd F CALC 1		Specify the value of X to find the value of Y, by specifying the value of CALC.
5 3 ENTER		Enter "3" as the value of X and the value of Y is calculated. [The values X and Y appear at the bottom of the screen and the cursor appears at the corresponding point on the graph.]
6 2nd F CALC 2		Specify "Intsct" function to calculate the intersection point of the two graphs. [After completion of the calculation, the values of the X,Y intersection will appear at the bottom of the screen, and the cursor will appear at the corresponding point on the graph, as before.]
7 2nd F CALC 2		The graph is intersected at two points. Carry out the same operation as in **6** to find the second intersection. [After completion of the calculation, the values of the X,Y intersection will appear at the bottom of the screen, and the cursor will appear at the corresponding point on the graph, as before.]

Statistics calculations

Example

10 students achieved the following results in a mathematics examination. Draw a graph to classify these results into top, bottom and average score.

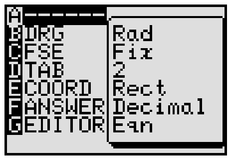
Exam results: 68, 73, 92, 86, 78, 95, 69, 75, 82, 81

Before carrying out the following operation, press the reset switch located on the back of the unit and press [CL] [ENTER] keys (caution: previously entered equations and memory will be erased).

Key Operation / ***Display*** / ***Notes***

1

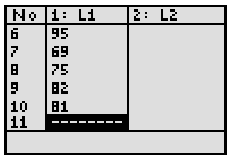
[2nd F] [SET UP]
[D] [2] [C] [2]



Specify two figures after the decimal point on the set up screen.

2

[⊞⊟⊠⊡] [STAT] [A] [ENTER]
[6] [8] [ENTER] [7] [3] [ENTER] [9] [2] [ENTER]
[8] [6] [ENTER] [7] [8] [ENTER] [9] [5] [ENTER]
[6] [9] [ENTER] [7] [5] [ENTER] [8] [2] [ENTER]
[8] [1] [ENTER]



Enter all the exam results into the list L1.

3

[⊞⊟⊠⊡] [STAT] [C] [1]



Select the variable quantity of the statistics from the statistics mode.

4

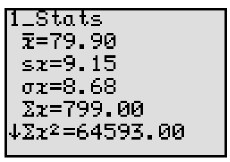
[2nd F] [L1]



Specify the list L1 containing the exam data.

5

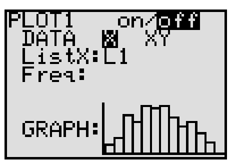
[ENTER]



Calculates the quantity of the statistics such as average, standard deviation, total and bottom score.

6

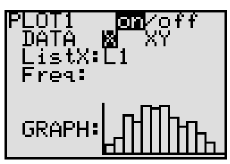
[2nd F] [STAT PLOT] [A] [ENTER]



Set the screen for the various specified values in order to draw the statistical graph with PLOT1.

7

[ENTER] [▼] [ENTER]
[▼] [2nd F] [L1]
[▼] [▼]

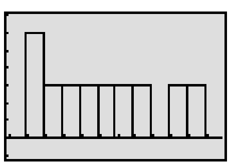


Input of the specified values for drawing a histogram from the list L1 of the statistical quantity has been completed.

[on/off: set whether to graph or not
DATA: select variable 1(X) or variable 2 (XY).
List X: set the list of the corresponding graph.
Freq: set frequency
GRAPH: set graph format]

8

[ZOOM] [A] [9]



Draw the graph by setting the most suitable screen for the statistical graph.

EL-9400 Graphing Calculator

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